Abstract

The number of low to medium rise structures that sustained significant damages during earthquake is large. Seismic isolation of structures from ground is a modern technique that has gained popularity and is rapidly evolving. The premise of seismic isolation is that a superstructure can be decoupled from the ground, thereby reducing the effect of ground shaking on structures. To decouple the structure, a flexible interface is provided at or near the foundation, such that during an earthquake lateral deformations are concentrated across the isolation interface thereby minimizing the deformations in superstructure. To estimate the suitability of a particular base isolation device it is necessary to characterize the force deformation behavior of these devices. Thus a base isolation device must possess very high vertical stiffness and low horizontal stiffness along with high strength. In the present study a base isolation test rig designed and analyzed. The preliminary design of rig is carried out manually and the detailed finite element analysis of the frames (based on] preliminary manual design) has been carried out. The final test rig design comprises of different components, namely Horizontal Member, Vertical member, base plate, strut and ribs and has maximum deformation of **0.466mm** and **0.343mm** in vertical and horizontal direction respectively, corresponding to a horizontal force of **1000kN** and a vertical force of **10000kN**. The estimated approximate weight of test rig setup (steel) is **62** tones.